

ITRC Draft PFAS Technical and Regulatory Guidance
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Organization: EPA

Section	Page	Line Numbers	Comment	Commenter
	1	9	325 Polymers also comprise over 80% of all sales products (DuPont) and are an important potential source of PFAS. Polymers are a potential source of non-polymer PFAS due to residuals present in polymer, and potential polymer biodegradation and hydrolysis (see discussion in Section 5.4.5 and research by John Washington et al. at EPA/ORD). In the latest study on PFAS by Washington et al. (Washington et al. 2018, Determining global background soil PFAS loads and the fluorotelomer-based polymer degradation rates that can account for these loads), they determined that global soil levels of C10 and C12 are consistent with the lab half-lives reported in the earlier papers by Washington et al.	CCD
	1	10	367 Use another term to replace "despair." Buck et. al. 2011, has published a paper on terminology.	CCD
2.2.2.1	17	489-490	See previous comment regarding studies by Washington et al. showing polymers as a source of PFAS due to biodegradation and hydrolysis; there's also concern about residuals present in polymers as discussed in Section 5.4.5.	CCD
Fig 2-13	43	974	Consider adding "2006-2015 - 2010/2015 PFOA Stewardship Program (discussed in section 2.5.3)" to the "Federal Regulatory Actions" section of the graphic.	CCD
8.2.2.1	178	4748	Delete "some of the"	CCD
8.2.21	178	4760-4762	Replace last sentence in paragraph with "As a result of changes made to section 5(a) of TSCA when TSCA was amended in June 2016, EPA is now developing a supplemental proposed SNUR for the import of certain LCPFAC chemical substances as part of categories of certain articles." (Reference: https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=201810&RIN=2070-AJ99)	CCD
8.2.2.1	178	4763-4766	Should note that the numbers listed are for PMNs submitted for PFAS - EPA has also reviewed hundreds of exemptions (i.e., low volume exemptions) since 2006. The numbers came from an Inventory report, while chemicals submitted as exemptions are not listed on the Inventory. Suggest the following: "Since 2006, EPA has reviewed around 300 Premanufacture Notices (PMNs) for PFAS chemicals..." at line 4765	CCD

2.6.1.8	56-57	1395-1421	The title of the section is 'Minor Sources of PFAS Releases to the Environment' but all of the release areas listed in bullets below seem to imply that PFAS are being released all of the time (ex. personal health care products, herbicides/pesticides, cleaning agents). I believe the author intends to say that small releases of PFAS may occur through these everyday uses. The title of this section may need to be changed so the authors intent is clear. Depending on the audience for the document (a member of the general public vs. EPA internal doc) this section could be understood in very different ways.	CCD
Section 7.1.3	139	N/A	Intermediate metabolites may be of importance for some compounds. For example Rand and Mabury (2014) identify 5:3 saturated fluorotelomer carboxylic acid (5:3 FTCA) as a metabolite of 6:2 polyfluoroalkyl phosphate diester (6:2 diPAP). 5:3 FTCA appears in serum, liver, kidney at levels several times higher than, for example, PFHxA. Although metabolism was followed for just 24 hours, this suggests a need to consider the role of intermediate metabolites. Reference: Rand, A. and S. Mabury. 2014. Protein binding associated with exposure to fluorotelomer alcohols (FTOHs) and polyfluoroalkyl phosphate esters (PAPs) in rats. Environmental Science and Technology. 48, 2421-2429.	RAD
Section 7.1.3	139	N/A	Discussion of toxicokinetics among rodent species (in rats vs. mice) is also important. For example, some PFAS compounds exhibit longer half-lives in mice than in rats. In particular, this can possibly help to understand differences in potency of PFAS in toxicology studies conducted in rats vs. mice.	RAD
Section 7.1.4 and 7.1.5	146+	N/A	The epi studies and animal studies don't have any indication of the exposures or doses. The explanation to not include NOAEL/LOAELs or values such as odds ratios/relative risks is understandable, but without any dose information the reader is left with the impression that all of these effects are equally likely and all the PFCAs, PFSA's and PFECAs are equally potent. At least listing dose ranges used in the studies and the outcomes of epidemiological studies could help to put the effects into context.	RAD
Section 7.1 and Section 9.1.1.1	136+ and 197+	N/A	A draft EPA toxicity assessment for the GenX process (HFPO dimer acid and ammonium salt) are available and can be used to inform toxicity (and environmental fate) for these compounds (https://www.epa.gov/pfas/genx-and-pfbs-draft-toxicity-assessments). Section 9.1.1.1 could also reference the assessment.	RAD
Section 7.1.6	161		Additional areas of possible research: neurobehavioral effects for widely used compounds.	RAD
Section 7.1.6	161	4306	An understanding of the importance of conducting studies on intermediate metabolites could be included. For example, Rand and Mabury, 2014 [see related comment for Section 7.1.3, pg. 139] only analyzed metabolites for 24 hours after dosing with 6:2 diPAP; a longer dosing period for these compounds might help understand the concentrations of such metabolites in tissues over time.	
Section 7.1.6	161	4322	It would be helpful to state why studies should be conducted in mice for PFHxS; this might be coordinated with adding brief discussion of species differences (e.g., rats vs. mice) in previous sections.	RAD
5.4.4.1 Abiotic Pathways		2597	showed that the hydrolysis of fluorotelomer-derived <u>polymeric precursors</u> form <u>monomeric precursors</u> of PFOA and other PFCAs	ORD

5.4.4.1 Abiotic Pathways		2598	with half-lives of ver 50 to 90 years at neutral pH. Also, oxidation of precursors by	ORD
5.4.11		2785	1400 years. Further, the authors modeled and estimated the half-life for finely grained polymers, <u>typical of commercially produced products,</u>	ORD
5.4.12		2786	by normalizing to the estimated surface area of the polymer, which was between 10-17 years, but	ORD
5.4.13		2787	is considered questionable (Russell et al. 2010b; <u>Washington et al. 2010</u>). Further,	ORD
5.4.14		2789	exhaustive extractions (<u>Washington et al. 2014</u>) and estimated half-lives ranging from 33 – 112 years. In this study, it was	ORD
5.4.15		2790	also observed that the acrylate polymer can undergo <u>hydrolysis with half-lives of decades at circum-neutral pHs, and OH- mediated hydrolysis in pH 10 water</u>	ORD
5.4.16		2791	<u>and degraded 10-fold faster than the neutral treatment control.</u> Another research group, Rankin et al.	ORD
5.4.17		2800	<u>debated. Nevertheless, the large majority of recent studies suggest commercial side-chain fluorinated polymers have half-lives in the general range of decades (Washington et al. 2018).</u> Other environmental conditions which need to be considered are redox, pH,	ORD
5.4.18			References added: Washington, J.W., J.J. Ellington, T.M. Jenkins, H. Yoo. 2010. Response to Comments on “Degradability of an acrylate-linked, fluorotelomer polymer in soil. Environmental Science & Technology. 44. 849-850. Washington, J.W. J.E. Naile, T.M. Jenkins, D.G. Lynch. 2014. Characterizing Fluorotelomer and Polyfluoroalkyl Substances in New and Aged Fluorotelomer-Based Polymers for Degradation Studies with GC/MS and LC/MS/MS. Environmental Science & Technology. 48. 5762-5769. Washington, J.W., K. Rankin, E.L. Libelo, D.G. Lynch, M. Cyterski. 2018. Determining global background soil PFAS loads and the fluorotelomer-based polymer degradation rates that can account for these loads. Science of the Total Environment. 651. 2444-2449.	ORD
Method Limitations		7618	(Russell et al. 2008, Russell et al. 2010a, Washington et al. 2009; <u>Washington et al. 2015a, Washington et al. 2015b</u>) relative to low molecular	ORD
Method Limitations			References added:	ORD
Method Limitations			J.W. Washington, T.M. Jenkins, K. Rankin, J.E. Naile. Decades-scale degradation of commercial, side-chain, fluorotelomer-based polymers in soils & water. Environ. Sci. Technol., 49 (2) (2015), pp. 915-923	ORD
Method Limitations			J.W. Washington, T.M. Jenkins. Abiotic hydrolysis of fluorotelomer-based polymers as a source of perfluorocarboxylates at the global scale. Environ. Sci. Technol., 49 (24) (2015), pp. 14129-14135	ORD